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THE EFFECTS OF SYSTEMATIC DESENSITIZATION AND MUSIC THERAPY ON THE ACADEMIC PERFORMANCE OF TEST ANXIOUS STUDENTS

by

© MARIA THERESIA RITA POMIETLARZ

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

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DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

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THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled The Effects of Systematic Desensitization and Music Therapy on the Academic Performance of Test Anxious Students submitted by Maria Theresia Rita Pomietlarz in partial fulfilment of the requirements for the degree of Master of Education in Counselling Psychology.

R H Short
.....
Supervisor

.....

.....

Date June 8/1978

DEDICATION

To my mother and father, whose love, support and many sacrifices have made a difference.

ABSTRACT

The purpose of the present study was to investigate the effectiveness of systematic desensitization and music therapy in reducing anxiety, as evidenced by treatment-control group performance comparisons. Twenty-five test-anxious (as determined by scores on the Suinn's Test Anxiety Behavior Scale) student volunteers were divided into three matched groups on the basis of the grade they obtained on their mid-term examination in Educational Psychology 271. Nine of the high test anxious students participated in a systematic desensitization treatment program prior to writing their final examination in Educational Psychology 271, seven high test anxious students participated in a music therapy program while writing their final examination in Educational Psychology 271, nine test anxious students were in a control group. The data were analysed by a one-way analysis of covariance. The ANCOVA revealed no significant performance differences between the adjusted means of the treatment groups and control group.

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CHAPTER I

INTRODUCTION

The concept of anxiety is recognized by many psychologists as the most prevalent psychological phenomenon of our time. Spielberger (1966) contends that its popularity, as a topic of study may be a result of its prominance in our society. Evidence of anxiety exists in all levels of society. Recent research has revealed that there are a wide variety of situations that are anxiety-provoking for different individuals. The present study is concerned with anxiety that is produced in testing situations. This anxiety has traditionally been isolated and labelled "test anxiety."

Sarason, Davidson, Lighthall, and Waite (1960) maintain that research regarding test anxiety is warranted since: 1) most persons in our society are exposed to some form of a test situation at one time or another, 2) the test situation is viewed as being evaluative by both the tester and testee, 3) frequently, the future of individuals is determined by their performance on examinations.

The purpose of the present study is to investigate the effectiveness of two therapeutic approaches in reducing test anxiety. Spielberger (1972) suggests that there is a need for studies, such as the present one, which compare the effectiveness of different therapeutic approaches for test anxiety.

One of the therapeutic approaches, systematic desensitization, has already been researched extensively. In addition to numerous studies which have demonstrated the effectiveness of the conventional form of systematic desensitization in the treatment of test anxiety, others have explored procedural variations of systematic desensitization for test anxiety. Generally, these variations in procedure have been developed to increase the availability and efficiency of the therapy. Procedural variations of systematic desensitization that are utilized in this study include: group desensitization, standardized hierarchies, accelerated massed treatments, and automated relaxation training.

The other therapeutic approach for test anxiety used in this study is music therapy. To date, considerably less research has been conducted on music therapy than on systematic desensitization, particularly with regard to test anxiety.

In summary, the present study will compare the effectiveness of systematic desensitization with music therapy in the reduction of test anxiety.

CHAPTER II

REVIEW OF RELATED LITERATURE

The review of the literature has been divided into four major sections. In the first section of this chapter, the author examines the concept of anxiety. Differing views of anxiety are briefly considered, followed by a discussion of state versus trait anxiety. The author then defines test anxiety and describes the components of test anxiety. The second section, focuses on systematic desensitization. This section commences with a description of systematic desensitization, followed by a review of recent studies that use systematic desensitization with test anxious individuals. The third section, addresses itself to the use of music in relaxation, with special emphasis given to the use of music in reducing anxiety in academic settings. This chapter culminates in a statement of hypotheses.

CONCEPT OF ANXIETY

Anxiety is a key construct in psychological theorizing. Spielberger maintains that it is a central explanatory concept in most contemporary theories of personality and is a principal source for a diversity of behavioral consequences (Spielberger, 1966, p. 4). A review of psychological research reveals a marked increase in investigations dealing with anxiety during

the last twenty years. However, a great deal of discrepancy exists in the reported literature regarding the nature of anxiety. The inconsistency in the anxiety research may arise because theoreticians define anxiety from their own frames of reference (Hay, 1971). For example, Freud described anxiety as an affective state - in terms of repressed, unrelieved, somatic sexual tensions (Freud, 1936, p. 69). Malmo (1957) defines anxiety as a state of "overarousal," which results from extended exposure to threatening or demanding situations. May (1950), an existential psychologist, contends that a person experiences anxiety when his value system is threatened. Cattel (1957, pp. 255-256) regards anxiety as syndrome comprising the qualities of tension, irritability, lack of self-confidence, unwillingness to take risks, tremour and various psychosomatic signs.

Psychologists with a behavioral orientation believe that anxiety is conditioned. According to Wolpe, anxiety is "a particular organism's characteristic pattern of autonomic responses to noxious stimulation" (1958, p. 34). The behavioral school of thought maintains that the personality is primarily comprised of learned habits. Habits are consistent modes of responding to particular stimulus conditions. Associations are formed between the stimulus and the response, repeated associations are learned and thus form habits.

Habits that become unadaptive, i.e. that fail to gratify the needs of the individual, usually undergo extinction. However, some unadaptive habits fail to

extinguish. These are the habits with which behavior therapy is concerned. Behaviorists contend that since neurotic behaviors are the result of learning, treatment should concentrate on the unadaptive learned habits. This type of treatment is in contrast with the psychoanalytic orientation which emphasizes the treatment of underlying causes.

Within the context of this study, anxiety is viewed in the behavioral perspective. More specifically, anxiety is considered as an unadaptive learned habit.

State-Trait Anxiety

The present study is based on the theoretical formulation of a Trait-State concept of anxiety. Spielberger (1966) demonstrated that the construct of anxiety has two distinct factors which have been labelled as "A-Trait" anxiety and "A-State" anxiety.

The following distinction was made by Spielberger, Forsuch and Lushene (1970, p. 2):

> State anxiety (A-State) is conceptualized as a transitory emotional state or condition of the human organism that is characterized by subjective, consciously perceived feelings of tension and apprehension and heightened autonomic nervous system activity. A-States may vary in intensity and fluctuate over time.
>
> Trait anxiety (T-Trait) refers to relatively stable individual differences in anxiety proneness, that is, to differences between people in the tendency to respond to situations perceived as threatening with elevations in A-State intensity.

Test anxiety, the concern of the present study, is a specific situational state-anxiety.

Test Anxiety

Test anxiety, as is implied by its name, refers to anxiety proneness in a test situation. The first contributors to the test anxiety theory were Mandler and Sarason (1952). Since that time much research has been undertaken on the concept. Recent research indicates that anxiety can interfere with performance on tests (Ruebush, 1963; Frost, 1968; Spielberger, 1966; and Hill and Sarason, 1966). The debilitating effects of test anxiety as described by Suinn (1968) and Emery and Krumboltz (1967) include the following: an inability to recall and organize material, difficulty in understanding simple test items and instructions, and feelings of tension. The present investigation is concerned with the alleviation of the debilitating effects of test anxiety. The two treatments which are used in this study focus on reducing the emotionality component of anxiety.

The Components of Test Anxiety

A recent investigation conducted by Liebert and Morris (1967) suggests that test anxiety was composed of two major components: "worry" and "emotionality." The worry component was conceived as the cognitive concern over one's performance, while the emotionality component was defined as the autonomic or physiological reactions to the stress of examinations. A later study by Spiegler, Morris and Liebert (1968) supports the above hypothesis that the emotionality component of test anxiety is a function of the stress of the examination situation, while the worry component is not. Thus, Davis (1976)

contends that the worry component is associated with trait-anxiety, whereas the emotionality component is associated with state-anxiety.

Systematic desensitization and music therapy (the two treatment modes used in this study) both focus on alleviating the emotionality component of test anxiety. Although some recent investigators, Valins (1966) and Valins and Ray (1967) propose that cognitive processes are major components in desensitization, Wolpe (1973) maintains that desensitization is primarily based on "emotional" reconditioning.

SYSTEMATIC DESENSITIZATION

Systematic desensitization is one of the treatments used in this study to reduce test anxiety.

Systematic desensitization breaks down learned neurotic anxiety response habits in a step-by-step fashion. Counterconditioning, the basic principle underlying systematic desensitization, is a procedure in which a particular learned response (anxiety) is inhibited by learning a new response (deep muscle relaxation) that is incompatible to the anxiety. The principle of counterconditioning actually originated from Guthrie's (1935) threshold system of replacing habits.

During desensitization, the subject is trained in deep muscle relaxation, a physiological state that is antagonistic to anxiety. The deep muscle relaxation training usually follows a modification of Jacobson's Progressive Relaxation (1938). The autonomic effects of Jacobsonian relaxation are

opposed to those characteristic of anxiety. Therefore, when relaxation and an anxiety evoking stimulus are counterposed, the anxiety response habits that are generally evoked by the stimulus diminish. Thus, the association between the stimulus event and the anxiety response habit is broken down, while in its place a new association is being built up between the same stimulus event and the relaxation response. Wolpe (1973) has described this latter process as reciprocal inhibition.

Systematic desensitization has been utilized in the treatment of many neurotic habits including test anxiety.

Variations in Procedure

Recent studies have provided positive results when procedural innovations of desensitization therapy were implemented for test anxious subjects. These variations in procedure have attempted to enhance the availability and efficiency of the therapy. Successful adaptations that are of relevance to the present study include group desensitization, standardized hierarchies, accelerated massed treatments, and automated relaxation training.

Group Desensitization

When several people experience the same unadaptive neurotic habit, desensitization can be performed with a group.

Wolpe (1973) maintains that group desensitization can be a beneficial innovation providing that the therapist ensures that each image has ceased to produce anxiety in every individual prior to presenting the next scene. One of the first

published studies (Suinn, 1968), investigating the effectiveness of group treatment with test anxious subjects, demonstrated that a combination of group and individual desensitization was successful in the reduction of test anxiety. Later Studies (Ihli and Garlington, 1969; Scissons and Njaa, 1973) compared the effectiveness of group treatment with individual treatment and found that there was no significant difference between the two types of treatments. Further investigations have confirmed the success of group treatment in reducing test anxiety with nursing students (Dawley and Wenrich, 1973), with junior high school students (Deffenbacher and Kemper, 1974) and with 5th and 6th graders (Barabasz, 1973). The positive results of the above investigations suggest that group desensitization can be an effective procedural innovation.

Standardized Hierarchies

In some recent studies when systematic desensitization has been administered to a group, a standardized hierarchy has been used to minimize problems in hierarchy construction. Successful results in the use of standardized hierarchies have been reported by Deffenbacher (1974) with test anxious and speech anxious subjects, Deffenbacher and Kemper (1974) with test anxious 6th graders and Barabasz (1973) with test anxious 5th and 6th graders. Indications from these three recent studies suggest that the use of a standardized hierarchy is viable in group desensitization.

Accelerated Massed Treatment

Accelerated massed densitization is another economical modification of Wolpe's original therapy which involves providing the treatment in a shorter, more massed time period. Recent investigations have found support for this innovation of the traditional "distributed" approach: Richardson and Suinn (1974) and Suinn, Edie, Nicoletti and Spinelli (1973) with test anxious undergraduate university students; Suinn, Edie and Spinelli (1970), and Richardson and Suinn (1973) with mathematics anxiety; and Dawley and Wenrich (1973) with test anxious nursing student. The foregoing studies provide evidence of the effectiveness of accelerated massed desensitization. These studies have reduced treatment time from months to weeks, to days and even hours.

Automated Relaxation Training

In some studies the relaxation training preceding the actual desentization has been provided by the use of an automated tape recording (Garlington and Cotler, 1968; Ihli and Garlington, 1969). Recently several studies have used automated techniques for the desensitization treatment as well as the relaxation training, however this is not the concern of the present study.

Indicators of Success

Recent research studies, which have investigated the effectiveness of systematic desensitization, have generally used self-ratings of anxiety as measures of success. Most of

the studies cited in the above review have relied on self-ratings. As is evident from the review, most of these studies have demonstrated that systematic desensitization is effective in reducing test anxiety when evaluated by self-ratings. Considerably fewer studies have utilized academic performance as a measure of success. Academic performance, is generally viewed as a more objective, reliable and co-operation free measure of success. However, the evidence for success of the desensitization is less clear when measures of performance are used. Paul (1968) and Johnson and Sechrest (1968) reported positive and significant increases in grade point averages after desensitization treatment, while Emery and Krumboltz (1967) and Garlington and Cotler (1968) reported no increases in grade point averages following treatments. Since the literature is replete with studies which have been concerned with the reduction of self-reported anxiety, the author of the present study has chosen to focus on the improvement of academic performance as a measure of success.

Systematic Desensitization Compared

The use of systematic desensitization in the reduction of test anxiety has been compared to other anxiety reducing practices - cue-controlled relaxation, covert positive reinforcement, implosive therapy and study skills counselling. Cue-controlled relaxation (Russell, Miller and June, 1975) and covert positive reinforcement (Kostka and Galassi, 1974) were found to be equally effective as systematic desensitization in the treatment of test anxious subjects. When Smith and Nye

(1973) and Cornish and Dilley (1973) compared implosive therapy (flooding) with systematic desensitization, they found systematic desensitization to be more effective.

Several studies have compared systematic desensitization and study-skills training. Osterhouse (1972) and Cornish and Dilley (1973) found desensitization to be more effective than study counselling, while the findings of Allen (1971) indicated that combining the two methods was more effective than using either method individually.

To date, no published research has compared the effectiveness of systematic desensitization to music therapy in reducing test anxiety in test anxious subjects.

THE USE OF BACKGROUND MUSIC IN REDUCING ANXIETY

In the present study, music therapy is one of the treatments used to reduce anxiety. Within the context of this investigation, music therapy refers to the use of background music to reduce anxiety. Like muscle relaxation therapy, music can effect physiological processes (emotionality) however would probably not influence cognitive processes (worry), (Smith and Morris, 1976).

The use of music in tension reduction is not new or revolutionary. As early as the beginning of the twentieth century, music was used by Kane (1914) to calm patients in the anesthesia room. Other early investigators, McGlinn

(1930) and Pickrell, Metzger, Wilde, Broadbent and Edwards (1950) reported that music was beneficial in alleviating tension in operating room personnel.

More recent studies have described the effectiveness of background music in reducing tension or inducing relaxation. The effects of music on a physiological parameter (Galvanic Skin Response) was studied by Peretti and Swenson (1974). They found that when background music was introduced while subjects were involved in an anxiety producing task, there was a significant decrease in anxiety level (as measured by Galvanic Skin Response). Stoudenmire (1975) compared the use of muscle relaxation training and music in the reduction of state and trait anxiety with undergraduate university students. The results revealed that relaxing music was as effective as muscle relaxation training in the reduction of state anxiety. Another study, conducted by Webster (1973), compared the effects of muscular relaxation therapy to a combination treatment of muscle relaxation paired with music in 50-60 year old male cardiac patients. Results measured by pulse rates revealed that relaxation therapy was more effective when paired with music. Mezzano and Prueter (1973 and 1974) found that soft, soothing background music was effective in promoting effective interaction in initial counselling interviews. The present author suggests that the positive effect of the background music may have resulted from an increase in relaxation for counsellor and client.

The foregoing studies demonstrate the effectiveness

of music in reducing anxiety in a variety of situations. The following section focuses on the use of music in reducing anxiety in testing situations which is of particular interest to the present investigation.

Music and Academic Performance

A survey of the literature revealed that only a minimum amount of research has investigated the effect of music in testing situations. Hall (1952) reported that background music aided eighth and ninth grade students in reading comprehension during a testing situation. Contrary to this, Freeburne and Fleischer (1952) found that background music did not enhance reading rate or reading comprehension in tertiary level students. However, they did determine that music was not a distractor for persons engaged in the reading tasks. Smith and Morris (1976) found that sedative music was ineffective in alleviating anxiety of college students while writing a multiple choice exam. The above studies did not take differing anxiety levels into account. Although music may not have any significant effect on a general population, music may have some significant effects on those students who are highly test anxious.

Stanton (1973, 1975) conducted two studies which are of particular relevance to the present investigation. Results of Stanton's 1973 study revealed a significant interaction between the level of test anxiety of university students and the presence or absence of background during an examination - high anxious students received better results when background

music was present. In a later study, Stanton (1975) compared the effects of the following conditions with test anxious students: silence, music as subjects entered the examination room and music throughout the exam. In addition to confirming the results of his previous study that an interaction exists between music and test anxiety, Stanton found that there was virtually no difference between the two music groups. Therefore, Stanton concluded that the facilitative effects of background music occurs as subjects prepare to write their exams, rather than while they were actually writing the exam. This study demonstrates the importance of having background music while the students are entering the room. Hence, the evidence from a number of investigations, generally supports the effectiveness of music in the reduction of anxiety.

Type of Music

When music is used as a relaxation technique, special care must be taken to ensure that appropriate music is selected. Music selected in the studies cited above has been described as: soft, soothing and sedative as opposed to lively and stimulating. Biller, Olsen and Breen (1974) specifically investigated the effects that different types of music had on anxiety. They concluded that "sad" music had a strong tendency to lessen state anxiety.

HYPOTHESES

The present study is designed to investigate the effectiveness of background music and systematic

desensitization in the reduction of test anxiety. More specifically, the author proposes that the debilitating effects of test anxiety (referred to in the first section of this chapter) will be alleviated through the two treatments. Thus, it is suggested that test anxious students who participate in one of the treatment groups will be able to improve in their performance on examinations.

The following hypotheses have been formulated:

(1) High test anxious subjects treated with systematic desensitization for test anxiety will show an increase in academic performance as evidenced by treatment-control group performance comparisons.

(2) High test anxious subjects exposed to the treatment of background music in a testing situation will show an increase in academic performance as evidenced by treatment-control group performance comparisons.

(3) There will be no significant difference in the academic performance of high test anxious subjects exposed to the treatment of background music in a testing situation and high test anxious subjects treated with systematic desensitization therapy for test anxiety.

CHAPTER III

METHODOLOGY

In this chapter, the author discusses the methodology utilized to test the hypotheses stated in the previous chapter. Consideration is given to the following: subjects, research design, instrumentation, treatment programs and analysis.

SUBJECTS

The subjects in this study were drawn from 280 students enrolled in Educational Psychology 271 at the University of Alberta. The target sample was selected on the basis of scores obtained on the Test Anxiety Behavioral Scale (STABS, Suinn, 1969). The STABS (see Appendix A) was administered to the students in their seminar groups prior to their mid-term examination.

RESEARCH DESIGN

The STABS was administered to 280 students who were enrolled in Educational Psychology 271. Fifty of these students scored one standard deviation above the mean on the STABS. These students were defined as "high test anxious" and thus comprised the target population for the present study. Following the mid-term examination in Educational Psychology 271, the high test anxious students were blocked in triads on the basis of their mid-term grade. The high test anxious students

who achieved the highest three grades comprised the first triad and the high test anxious students who obtained the lowest three grades comprised the last triad. Then, one member of each triad was randomly assigned to one of three groups: 1) systematic desensitization, 2) music therapy, 3) a control group. Each "high test anxious" student then was contacted by phone, informed about his/her STABS score, and asked to volunteer for a specified group. Originally 33 subjects volunteered to participate in the study. Thus, each group was comprised of 11 students. However, due to attrition the sample was reduced from 33 to 25.

TABLE I

Group Sizes

Original		
	Total population	33
	1) Systematic Desensitization	11
	2) Music Therapy	11
	3) Control	11
Final		
	Total population	25
	1) Systematic Desensitization	9
	2) Music Therapy	7
	3) Control	9

INSTRUMENTATION

STABS

The STABS was used as a pre-test measure of test-anxiety. It is a 50 item self-rating scale which consists of behavioral situations "which may arouse different levels of test-anxiety in clients" (Suinn, 1969, p. 336). The total test anxiety score is calculated by assigning each item a score of 1 ("Not at all anxious") to 5 ("very much anxious"). Therefore, high scores reflect high levels of test anxiety.

Normative data (Suinn, 1969) is available for the STABS. Test-retest reliability coefficients of .74 and .78 were reported for two norming samples. In the two separate samples the STABS correlated significantly with Sarason's Test Anxiety Questionnaire ($r = 0.59$, $p < .001$; $r = .60$, $p < .001$). The STABS also correlated positively with the number of errors on a course examination of one sample ($r = 0.24$, $p = 0.05$) and negatively with the final grade of both samples ($r = -0.26$, $p = -0.05$; $r = -0.28$, $p < 0.02$).

Self-Report Questionnaires: Systematic Desensitization

A self-report questionnaire was developed by the writer to assess the subject's percpetions of the overall effect of the systematic desensitization program (see Appendix B).

Self-Report Questionnaires: Music Therapy

A self-report questionnaire was developed by the

writer to assess the subject's perceptions of the overall effect of the music therapy program (see Appendix C).

TREATMENT PROGRAMS

Systematic Desensitization Treatment

Subjects who were assigned to the systematic desensitization group, attended one five hour group desensitization session prior to the final examination in Educational Psychology 271. The same therapist administered all treatment sessions. As previously mentioned, the systematic desensitization treatment involved the following procedural variations: group desensitization, automated relaxation training, accelerated massed treatment, and a standardized hierarchy.

During the first 15 minutes of the session, an explanation of the systematic desensitization procedure was presented. This was followed by the administration of the STABS which was used by the therapist to form a standardized hierarchy. The therapist maintained a 16 item pool for each group based on the group's responses to the STABS. After the administration of the STABS, deep muscle relaxation was induced. The deep muscle relaxation was presented on an audio-tape (see Appendix D). Upon the completion of the relaxation exercise, the subjects took a five minute break. This break gave the subjects time to come out of their relaxed state so that they could return and practice relaxing again.

Following the brief break, students once again

listened to the relaxation tape. While in a state of deep muscle relaxation, at the conclusion of the tape, the therapist began to present the 16 item hierarchy. Prior to the administration of the hierarchy, the subjects were given the following instructions:

> If you experience any muscular tension, as I ask you to imagine each of these scenes, I want you to immediately stop imagining the scene, and to focus your attention on relaxing. Additionally, when you are experiencing tension, signal to me by raising your index finger so that I know not to proceed to the next item on the hierarchy.

Another break followed the presentation of the first eight items in the hierarchy. When the students returned from their break, they once again listened to the muscle relaxation tape. The remaining eight hierarchy items were presented upon the completion of the tape.

Visual imaginary and a breathing technique were interspersed in the hierarchy presentation to deepen the relaxation achieved through the audio-tape exercise.

At the conclusion of the systematic desensitization treatment, students were encouraged to practice the technique at home. Students were provided with a copy of the STABS to aid them in selecting items which still produced anxiety.

Music Treatment

Subjects who were assigned to the background music wrote their final exam in a separate room which had background music playing. The music selected for this treatment could be classified as soothing and unfamiliar. The volume level was adequate for listening but not obtrusive. A reel to reel

tape recorder was used.

ANALYSIS

To test the hypotheses, the data were analysed by a one way analysis of covariance (ANCOVA). The Educational Psychology 271 mid-term examination was utilized as the covariate, while the Educational Psychology 271 final examination was the criterion measure.

CHAPTER IV

RESULTS AND CONCLUSIONS

In this chapter the author presents the statistical analyses of the results. First, a summary of the performance measure is presented. Then, a restatement of each hypothesis is given, which is, in turn, followed by the presentation of the results and conclusions for each given hypothesis. This chapter culminates with a summary of the responses to the subjective self-report questionnaires.

PERFORMANCE MEASURE

As mentioned in the previous chapter, the mid-term examination scores and final examination scores were used as covariate and criterion measure respectively. Table II presents the means and standard deviations of the mid-term and final examination scores for the systematic desensitization group, the music therapy group and the control group.

HYPOTHESIS #1

Hypothesis #1 states: High test anxious subjects treated with systematic desensitization for test anxiety will experience a reduction in test anxiety as evidenced by treatment-control group performance comparisons.

TABLE II

Comparison of Means on the Performance Measures (Mid-Term and Final Examinations) for all Groups - Systematic Desensitization (SD), Music Therapy (MT), and Control (C)

Group	Performance Measure	n	$\bar{x}$	SD
S.D.	Mid-term	9	56	10.1
	Final	9	51.5	9.9
M.T.	Mid-term	7	54.9	10.6
	Final	7	49.4	11.6
C	Mid-term	9	57.8	11.6
	Final	9	58.8	10.6

Findings

The performance of nine test anxious students, who participated in a systematic desensitization treatment program prior to writing their final examination in Educational Psychology 271, was compared to the performance of a control group of nine test anxious students. The data were analysed by a one-way analysis of covariance. The Educational Psychology 271 mid-term examination was utilized as the covariate, while the Educational Psychology 271 final examination was utilized as the criterion measure. The ANCOVA revealed no significant differences (.05 level) between the adjusted means of the systematic desensitization treatment group and the control group. A summary of these results appear in Table III.

Conclusion

Hypothesis #1 is rejected.

TABLE III

Analysis of Covariance
Systematic Desensitization - Control Comparison

Source	DF	MS	F	P
Between Group	1	169.78369	3.69251	0.074
Within Group	15	45.98048		

HYPOTHESIS #2

Hypothesis #2 states: High test anxious subjects exposed to the treatment of background music in a testing situation will experience a reduction in test anxiety as evidenced by treatment-control group performance comparisons.

Findings

The performance of seven high test anxious students, who participated in a music therapy program while writing their final examination in Educational Psychology 271, was compared to the performance of a control group of nine test anxious students. The data were analysed by a one-way analysis of covariance. The Educational Psychology 271 mid-term examination was utilized as the covariate, while the Educational Psychology 271 final examination was utilized as the criterion measure. The ANCOVA revealed no significant difference (.05 level) between the adjusted means of the music treatment group and the control group. A summary of these results appear in Table IV.

Conclusion

Hypothesis #2 is rejected.

TABLE IV

Analysis of Covariance
Music - Control Comparison

Source	DF	MS	F	P
Between Group	1	251.71875	3.26427	0.094
Within Group	13	77.11323		

HYPOTHESIS #3

Hypothesis #3 states: There will be no significant difference in the performance of high test anxious subjects exposed to the treatment of background music in a testing situation, and high test anxious subjects treated with systematic desensitization therapy for test anxiety.

Findings

The performance of nine high test anxious students, who participated in a systematic desensitization treatment program prior to writing their final examination in Educational Psychology 271, was compared to the performance of seven high test anxious students who participated in a music therapy program while writing their final examination in Educational Psychology 271. The data were analysed by a one-way analysis of covariance. The Educational Psychology

271 mid-term examination was utilized as the covariate, while the Educational Psychology 271 final examination was utilized as the criterion measure. The ANCOVA revealed no significant differences (.05 level) between the adjusted means of the systematic desensitization treatment group and the music treatment group. A summary of these results appear in Table V.

Conclusion

Hypothesis #3 is supported.

TABLE V

Analysis of Covariance
Systematic Desensitization - Music Comparison

Source	DF	MS	F	P
Between Group	1	169.78369	3.69251	0.074
Within Group	15	45.98048		

SELF-REPORT QUESTIONNAIRES

Although systematic desensitization and music therapy were unsuccessful in increasing performance in test anxious students, subjects from both treatment groups reported benefits from the treatment. Self-report questionnaires were administered to both treatment groups following the final examination in Educational Psychology 271.

Eight of the nine subjects who participated in the

systematic desensitization reported that their anxiety in test situations had decreased since they had been involved in the program. Three respondents from the desensitization group commented on their ability to apply the technique to situations, other than examinations, which they regarded as anxiety arousing. For example, one subject reported less tension when speaking in front of groups, while another subject reported being more at ease when approaching professors.

Six of seven subjects who participated in the music therapy reported that they felt more relaxed during the examination with the background music than they usually feel during examinations.

SUMMARY OF RESULTS

In summary, the evidence from the present study indicated that systematic desensitization and music therapy were not effective in increasing academic performance. Although there were no significant changes in academic achievement as a result of systematic desensitization and music therapy, subjective self-report evaluations suggested that subjects who participated in either the systematic desensitization or the music therapy generally felt a reduction in anxiety.

CHAPTER V

DISCUSSION

The purpose of this study was to investigate the effectiveness of systematic desensitization and music therapy in reducing test anxiety in test anxious subjects. It was hypothesized that subjects treated with either systematic desensitization or music therapy would experience a reduction in test anxiety as evidenced by treatment-control group performance comparisons. However, these hypotheses were not supported by the present study. The analysis of covariance revealed no significant differences (.05 level) between the adjusted means of the treatment groups (desensitization and music) and control group.

In the present chapter, the author discusses some limitations which could have contributed to the insignificant findings. This is followed by some suggestions for further research. The chapter culminates with a summary of the study.

LIMITATIONS

The present study has several limitations which may have effected the results. These limitations include the number of subjects, the characteristics of the population from which the sample was drawn and the characteristics of the dependent variable.

This study was dependent upon the recruitment and

co-operation of volunteers. The author had difficulty recruiting an optimal number of volunteers. Accordingly, due to the small number of subjects (N = 25) in this study, the differences between the treatment groups and control group had to be greater to reach significance than if a larger number of subjects could have been recruited.

A second possible limitation of the study was the characteristics of the population from which the sample was drawn. In this study, most of the subjects were freshmen students (since Educational Psychology 271 is a compulsory course for freshmen students in Education). From a therapeutic viewpoint, offering freshmen students various programs to reduce anxiety is beneficial, however, from a research oriented viewpoint, freshmen students may not be the best subjects (Allen and Desaulniers, 1973). Often, freshmen students may have several stressors as a result of the new environment which may add to their test anxiety.

A further point, concerning a possible characteristic of the sample and its relationship to the findings should be made. Spielberger (1962) contends that test anxiety has no effect on GPA of students who are at the extreme ends on scholastic aptitude (measured by the School and College Ability Tests) (SCAT). Spielberger reports that students scoring at the upper extreme on the SCAT perform well regardless of test anxiety, while students scoring at the lower extreme perform poorly regardless of test anxiety. Students in the middle range tend to be the only students who are effected by

test anxiety. According to Spielberger, treatment may not have been effective in increasing the performance of some of the subjects in the present study.

A third possible limitation of the study was the dependent measure - the performance on the final examination in Educational Psychology 271. This examination was a 92 item multiple choice question type. An examination of this type requires recognition as opposed to thought organization process that is required for an essay examination. It is possible that an essay examination may have been a better dependent measure to differentiate between the treatment and control groups.

Furthermore, in regard to the dependent variable, the author had no way of equating the covariate (the mid-term examination) and the dependent variable (the final examination) in terms of difficulty.

RECOMMENDATIONS FOR FURTHER RESEARCH

The literature is replete with empirical studies which use various therapies, particularly systematic desensitization, to reduce self-reported anxieties, however, considerably less research has been concerned with increasing academic performance. Therefore, further research is required to determine the most effective therapies for improving academic performance in test anxious students. The following suggestions may be considered as starting points for further research:

1. Recent research has demonstrated that a combination of systematic desensitization and study counselling skills is more effective in increasing performance of test anxious students than either procedure used alone (Allen, 1971;Doctor, Aponte, Burry and Welch, 1970). The present author suggests that future research attempts to combine a variety have techniques that have been used to reduce test anxiety as opposed to using each procedure individually.
2. In regard to combining various therapies, the author would more specifically like to suggest combining cognitive and emotional therapies. For example, combining attentional training (Wine, 1971) with music or desensitization.

SUMMARY

The findings of the present study indicated that music therapy and systematic desensitization were not effective in increasing academic performance as evidenced by treatment-control group performance comparisons. However, although there were no significant changes in academic achievement as a result of systematic desensitization and music therapy, subjective self-report evaluations suggested that subjects who participated in either the systematic desensitization or music therapy generally felt a reduction in anxiety.

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APPENDIX A

The Suinn's Test Anxiety Behavioral Scale

STABS

The next 50 items refer to experiences surrounding test situations or examinations that often cause people some apprehension. For each item, mark the answer sheet with the response which describes how much you are bothered by it nowadays. A response of:

1. means Not at all
2. means A little
3. means A fair amount
4. means Much
5. means Very much

Work quickly, mark an answer for every item, and consider each item individually.

1. Going into a regularly scheduled class period in which the professor asks the students to participate.
2. Re-reading the answers I gave on the test before turning it in.
3. Sitting down to study before a regularly scheduled class.
4. Turning my completed test paper in.
5. Hearing the announcement of a coming test.
6. Having a test returned.
7. Reading the first question on a final exam.
8. Studying for a class in which I am scared of the professor.
9. Being in class waiting for my corrected test to be returned.
10. Seeing a test question and not being sure of the answer.
11. Studying for a test the night before.
12. Waiting to enter the room where a test is to be given.
13. Waiting for the test to be handed out.
14. Being called on to answer a question in class by a professor who scares me.

15. Waiting for the day my corrected test will be returned.

16. Discussing with the instructor an answer I believed to be right but which was marked wrong.

17. Seeing my standing on the exam relative to other people's standing.

18. Waiting to see my letter grade on the test.

19. Studying for a quiz.

20. Studying for a midterm.

21. Studying for a final.

22. Discussing my approaching test with friends a few weeks before the test is due.

23. After the test, listening to the answers which my friends selected.

24. Looking at the clock to see how much time remains during an exam.

25. Seeing the number of questions that need to be answered in the test.

26. On an essay exam, seeing a question I cannot answer.

27. On a multiple choice test, seeing a question I cannot answer.

28. Being asked by someone if I am ready for a forthcoming exam.

29. Being the first one to finish an exam and turn it in.

30. Being asked by a friend concerning my standing in a class.

31. Being asked by a friend concerning results of a test on which I did poorly.

32. Discovering I need an A or B on the next exam in order to pass the course.

33. Discovering I need an A or B on the final exam to maintain the grade point average necessary to remain in school.

34. Thinking about "warning slips" from the Dean's office.

35. Reading a "warning slip" from the Dean's office.

36. Remembering my past reactions while preparing for another test.

37. Seeking out the teaching assistant or instructor for advice or help.

38. Being told to see the instructor concerning some aspect of my class work.

39. Asking for a make-up exam after missing the scheduled exam.

40. Discussing the course content with the fellow students just before entering the classroom the day of the exam.

41. Being the last one to finish an exam and turn it in.

42. Reviewing study materials the night before an exam.

43. On the first day of the course, hearing the instructor announce the dates of the midterm and final examination.

44. Having the instructor ask a question of the class which deals with the course material, and then look in my direction.

45. Making an appointment to see the instructor regarding some course problem.

46. Thinking about a coming exam 3 <u>weeks before</u> its scheduled date.

47. Thinking about a coming exam 1 <u>week before</u> its scheduled date.

48. Thinking about a coming exam the weekend before its scheduled date.

49. Thinking about a coming exam <u>the night before</u> its scheduled date.

50. Thinking about a coming exam the <u>hour before</u> its scheduled time.

APPENDIX B

Self-Report Questionnaire
Systematic Desensitization

QUESTIONNAIRE

1. How did you feel about examinations prior to being involved in the desensitization program?

2. Has your anxiety about examinations changed? In what way?

3. Has your approach to other situations that you consider as anxiety arousing changed?

Comments

APPENDIX C

Self-Report Questionnaire
Music Therapy

QUESTIONNAIRE

1. Were you aware of the music?

2. What effect did the music have?

   Positive

   Negative

   None

3. Did you feel more relaxed during this exam than you usually feel during exams?

4. Would you classify the music as

   soothing and soft or stimulating and lively

5. Do you listen to music while studying?

6. What kind?

   Name one of your favorite groups or artists.

7. What volume do you like your music at?

---

1 2 3 4 5 6 7 8 9 10

APPENDIX D

Relaxation Exercise

RELAXATION EXERCISE

I want you to clench your left fist, clench it very tightly and study those tensions, Hold it! and now relax. Relax your left hand, let it rest comfortably on the arm of the chair and note the difference between tension and relaxation. Once again now, clench your left fist, clench it very tightly and study those tensions. And now relax. Relax your hand, and once again noting the very pleasant contrast between tension and relaxation. Now with your right hand. Clench your right hand into a fist and study the tensions in the hand and forearm. Study those tensions and now relax. Let your right hand go loose and relaxed. Once again clench your right hand. Study the tensions. Hold it! and now relax your right hand. Let your hand open and get very relaxed. Note the relaxation that is very gradually coming into both your left and right hands. Now with your left hand bend your left hand upward at the wrist so as to point your fingers toward the ceiling. And study the tensions now especially in the back of the hand and in the forearm. Study that tension and now relax. Relax that wrist and note the difference between tension and relaxation.

There is no need to strain the muscles when I tell you to tense them. All you have to do is tense them a little bit below the level where they could possibly be strained. So do that once again with the left wrist. Point the fingers upward so that you can feel the tension in the back of the hand, and in the forearm. And now relax that once again. Now let the left hand rest comfortably on the arm of the chair and continue relaxing. Now let's do the same with the right hand. Point the right hand upward toward the ceiling at the wrist. Study the tensions in the right forearm and in the back of the hand and relax that, and let it drop down and note the difference once again between tension and the pleasant feeling of relaxation. Once again, bend your right hand up at the wrist, pointing toward the ceiling. Study the tension, hold it, and now relax. Relax the right hand. Let it go loose and enjoy these feelings of relaxation that become more evident in both the left and right hands and forearms.

Now with both arms, I want you to flex your biceps muscles by bringing the hands up towards the shoulders. Almost trying to touch each shoulder with the respective hand. That's right, study the tension and now relax. Note the difference here primarily in the biceps, the difference between tension and relaxation. Let's do that once again. Bringing both arms up, flexing the bicep muscles, feeling the tension, making them hard. And now relax once again. Relaxing those muscles, noting the difference between the tension and the relaxation.

Now I want you to shrug both shoulders. Bring both

shoulders up as if you wanted to touch your ears with your shoulders. Way up! and feel the tension in the shoulders and back of the neck and the upper back. Study that tension and now drop your shoulders. Relax those muscles, let them get limp and loose and relaxed. Let's do that once again. Shrug your shoulders, bringing them way up, almost to touch your ears. Study the tension, and now relax. Letting the shoulders drop down and continue to soak up these feelings of relaxation spreading now into the shoulder area.

Now I want you to wrinkle up your forehead. Wrinkle it up frowning. Make it as wrinkled as you possible can. Study the tension around the eyes, above the eyes, in the forehead region. And now smooth out the forehead. Relax those muscles. Let them get very loose and smooth and relaxed. Once again, wrinkle up your forehead. Study the tensions in the forehad above the eyes. Study those tensions and now relax. Relax the forehead. Smooth it out and note once again the difference between tension and the very pleasant feeling of relaxation.

Now I want you to close your eyes tightly. Close them tightly so that you feel the tension around your eyes. Study that tension and now relax. Let your eyes remain lightly closed as they were before. Very relaxed, comfortably relaxed. Once again, close your eyes very tightly, study the tension, and relax now, relax those muscles, let them get loose and relaxed.

Now I want you to press your tongue up into the roof of your mouth. Tensing the muscles that control the movement of the tongue. Study that tension and now relax. Let the tongue drop down to the floor of the mouth and rest comfortably. Relax. Let's do that once again. Push your tongue up into the roof of your mouth, feel the tension in the mouth and now relax. Relax those muscles as you have been relaxing the others. And let yourself get more and more relaxed now, more and more relaxed.

Now I want you to press your lips together. Press your lips together so that you can feel tension around the mouth. Push them together, study that tension, and now relax. Just relax your lips, your mouth, noting once again the difference between the tension and relaxation. Once again, press your lips together. Study the tension around the mouth. Hold it, study it, and now relax. Relax those muscles, let your lips be slightly parted as they are when your mouth is completely relaxed, very comfortably relaxed.

Now I want you to push your head back against the chair so that you can feel tension in the back of the neck. Push it back. Study that tension and now relax. Let your head return to where it was before, to the resting position and feel the relaxation. Feel the relaxation now going into

the area of your neck. Once again, push your head back against the chair. Study the tension in the back of your neck. Hold it! And now relax. Relax those muscles and let them get more and more comfortable and loose and relaxed.

Now I want you to bend your head forward and bury your chin into your chest, tensing the muscles more in the front of the beck now. Feel that tension and now relax. Let the head go back to where it was. Note once again the difference between relaxation and tension. Do that once again. Push your head forward until the chin is buried into the chest. Study that tension and now relax. Relax those muscles. Note how the relaxation is spreading now down from the forehead, through the facial muscles, and now into your neck. Note also how it is developing more and more into the shoulders, the upper back, the arms, the hands. These parts of your body feeling more loose, more relaxed. Getting more and more comfortably relaxed.

Now I want you to arch your back. Bring your back off the chair, sticking out your chest and stomach. Feel the tension now in your back, and relax. Let yourself relax in the chair, noting the difference in the tension of the back muscles and the present relaxation. Do that once again. Arch your back up, way yp, study the tension, and now relax. Just continue relaxing like that, more and more relaxed.

Now to tense the muscles in the chest and stomach area I want you to take a very deep breath and hold it. Hold it, and study the tension throughout the chest area. And now exhale and continue breathing as you were. Just continue relaxing like that. Once again take a deep breath and hold it. Study the tension.

And now exhale, and continue breathing as you were, letting your breathing get more regular and more relaxed, more and more relaxed. Now take a very deep breath. Hold it. Now exhale, and once again a very deep breath. And hold it. And now exhale. And continue breathing very naturally, just continue as you were. Your breathing getting more regular, slower and more relaxed.

Now I want you to suck in your stomach. Almost as if you wanted to make it touch your spine. That's right! Suck it way in there. And now relax. Notice the difference once again between the tension and the relaxation. Do that once again now. Suck in the stomach, way in, study the tensions and now relax, relax the stomach and let the breathing get more and more relaxed.

Now I want you to tense the stomach muscles. Make your stomach very hard, as if someone is about to punch you in the stomach. Hold it! Study the tension and now relax. Relax the stomach muscles, let them get loose and relax.

Let's do that once again. Tense your stomach muscles, make your stomach get very hard. Hold it! and now relax. Relax those muscles. Let them get more loose, more relaxed. Notice how the relaxation is spreading downward now. Through your chest and now into your stomach area.

Now you can tense your buttocks by pushing your seat into the chair. That's right, into the chair. Study the tension, and now relax. Relax those muscles, let them get more loose, more relaxed. Once again now, push your seat into the chair. Study the tension now in your buttocks muscles. Hold it, and now relax. Relax those muscles, let them get more loose and more relaxed.

Now I want you to tense the thigh muscles in both legs. Stretch out both legs, lifting your feet off the ground, making the legs as straight as you can, feeling the tension in the muscles of your thighs. Hold it! And now relax. Let your feet drop. Let them get more relaxed. Study the very pleasing contrast between tension and relaxation. Do that once again, tense your thigh muscles, stretching out both legs as far as you can, study the tension and now relax. Just relax your thighs. Let them get loose and relaxed, more and more relaxed.

Now I want you to point your toes upward toward your face so that you are stretching the muscles in the calves. Do that with both feet. Study the tension and now relax. Relax the muscles of the calves. Let them get more loose, more relaxed. Do that once again. Tense your calf muscles by bending your feet upwards, pointing the toes towards your face. Study the tension. Hold it, and now let go. Relax. Note the relaxation coming into the calf muscles now.

Now I want you to curl the toes of both feet downward as if you were burying them into the sand. So that you can feel the tension, particularly in your arches. Study that tension and now relax. Note the difference once again between tensing them and relaxing them. Do it again. Curl your toes downward. Study the tension in your feet in the arch, and now relax. Just continue relaxing, getting more and more relaxed. Notice now how throughout your whole body, your muscles have gotten more relaxed, and how you are able to capture the very pleasant feeling which accompanies deep muscle relaxation. Notice how loose and heavy your body has become as you get more and more relaxed. Even when it seems impossible to relax any further, there is still an extra bit of relaxation available, an extra bit of feeling of well being, of calm. Just let yourself get more relaxed; more and more relaxed.

What I am going to do now is just run through the various muscle groups that we have relaxed. And as I name each one, you make sure that that muscle group is relaxed, try to make it even more relaxed than it is now. Both hands

relaxed, forearms and upper arms getting more loose, more relaxed; your shoulders resting easy and loose; your forehead now smooth and easy; your mouth, your neck, feel the relaxation spreading down now into your chest and stomach. Feel these parts getting more relaxed, more and more relaxed. Your buttocks and thighs feel it spreading downward into these parts and now into your calves and into your feet. Notice the very pleasant relaxation, let it get more and more relaxed now. Very comfortably relax. Just continue relaxing like that and soak up the very pleasant positive feelings that accompany this deep muscular relaxation. Just continue relaxing like that for awhile.